Health and Safety Plan for
Remedial Investigation/Feasibility Study Oversight
Gulfco Marine Maintenance Superfund Site
Freeport, Brazoria County, Texas
EPA Identification No. TXD055144539

EPA Region 6 Remedial Action Contract 2
Contract: EP-W-06-004
Task Order: 0006-RICO-06JZ

Prepared for

U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by

EA Engineering, Science, and Technology, Inc.
405 S. Highway 121
Building C, Suite 100
Lewisville, Texas 75067

August 2006
Revision: 00
EA Project No. 14342.06

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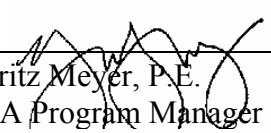

08/29/06

Fritz Meyer, P.E. — Date
EA Program Manager

08/29/06

Luis Vega — Date
EA Project Manager

for 08/29/06

Peter Garger, CIH — Date
EA Corporate Health and Safety Director

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1. INTRODUCTION

On 8 August 2006, the U.S. Environmental Protection Agency (EPA) issued Task Order 0006 under Remedial Action Contract No. EP-W-06-004 to EA Engineering, Science, and Technology, Inc (EA). Under this Task Order, EA is authorized to conduct Remedial Investigation/Feasibility Study (RI/FS) oversight of the potentially responsible party's (PRP) activities at the Gulfco Marine Maintenance (Gulfco) Superfund site (EPA Identification No. TXD055144539) located in Freeport, Brazoria County, Texas. The RI/FS oversight includes EPA contractor (the contractor) support for the oversight of the PRP's RI/FS activities, which may include: review of PRP work plans, oversight of PRP field investigations, review of PRP deliverables, and community relations functions throughout the RI/FS and decision making process. This site-specific Health and Safety Plan (HSP) was developed to address health and safety concerns associated with the oversight of PRP field investigation activities.

1.1 PURPOSE

The purpose of this HSP is to provide personnel with protection standards and mandatory safety practices, procedures, and contingencies to be followed while performing field activities at the site. This HSP as developed defines actions to be taken in respect to personal safety during work activities associated with the field activities defined in the PRP EPA-approved Work Plan (EA 2006) and discussed in Subsection 1.2.2, as well as the Field Sampling Plan (Volume I of the Sampling and Analysis Plan) prepared by the PRP's consultant, Pastor, Behling, and Wheeler, LLC (PBW 2006).

EA considers the health and safety of its employees, clients, and visitors and the prevention of work-related accidents and illness and property loss to be of the highest priority. Proactively implemented, a comprehensive and systematic health and safety program will result in more efficient and profitable operations by improving employee health and morale, and by reducing worker's compensation costs, lost time, fire and liability insurance premiums, and property damage. The objectives of EA's Health and Safety Program are to ensure:

- Sound health and safety practices and conditions necessary for the protection of the health and welfare of employees, clients, and visitors
- Compliance with federal and state health and safety regulations and standards
- Effective safety and fire prevention practices necessary for protection of company-owned or operated property.

This HSP addresses the following regulations and guidance documents:

- National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR 300.150
- Occupational Safety and Health Administration (OSHA) Standards for General

Industry, 29 CFR 1910

- National Institute of Occupational Safety and Health, OSHA, U.S. Environmental Protection Agency, and U.S. Coast Guard *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities,* October 1985.

One copy of this HSP will be maintained for use during the entire duration of field activities and made available for site use/employee review at all times.

EA personnel who enter the site are required to read and understand this HSP and sign the site HSP Review Record (Appendix A). EA field personnel are also required to review the HSP prepared by the PRP's consultant, PBW (2005).

1.2 BACKGROUND

This section provides a description of the site, lists the Scope of Work (as determined by EPA), and provides a list of potential constituents of concern for the site.

1.2.1 Site Description

The Gulfco site is located at 906 Marlin Avenue approximately 3 mi northeast of Freeport, Texas, Brazoria County; the site coordinates are 28°58'07" north latitude and 95°17'23" west longitude (Appendix B, Figure 1). The Gulfco site consists of approximately 40 acres within the 100-year coastal floodplain along the north bank of the Intracoastal Waterway between Oyster Creek to the east and the Old Brazos River Channel to the west. Marlin Avenue divides the site into two primary areas (Appendix B, Figure 2). The area south of Marlin Avenue drains toward the south where it enters into the Intracoastal Waterway. Drainage from the site north of Marlin Avenue is to the northeast into adjacent wetlands. The wetlands are classified as estuarine, intertidal, emergent, persistent, and irregularly flooded.

The property to the north of Marlin Avenue (the North Area) contains three closed surface impoundments and a former product storage tank area. The property south of Marlin Avenue (the South Area) contains two barge slips connected to the Intracoastal Waterway and an aboveground storage tank farm area within a concrete berm. However, there was no berm present around the aboveground storage tank area during a 1989 inspection. The property located north, west, and east of the North Area is unused and undeveloped. Adjacent property to the east of the South Area is developed and currently used for industrial purposes, while to the west, the South Area is currently vacant and previously served as a commercial marina. A residential community and marina are located west of the former marina.

The Gulfco site operated between 1971 and approximately 1998, after which time bankruptcy was filed. The primary site operations consisted of draining, cleaning, servicing, and repairing chemical barges. The barge repair work included welding, sandblasting, and painting. Beginning in 1971, wastes from the barges were placed in the former surface impoundments, which were earthen pits located on Lot 56 in the North Area. The wastes included oils, caustics,

various organic chemicals, and waste washwaters generated during barge cleaning activities. Several inspections during the 1970s reported overflow releases from the impoundments. The volume of waste materials placed in the impoundments is unknown. The impoundments were deactivated in October 1981 and closed in 1982. Impoundment closure included removal of liquids and most of the impoundment sludges. A portion of the contaminated sludge was mixed with soil and left in place, primarily in Impoundment 2 (the larger impoundment). The impoundments were capped with 3 ft of clay of unknown quality. Following closure of the impoundments, floating barges and aboveground storage tanks were used to store the barge washwaters.

In March 1999, sampling of the tanks in the aboveground storage tank area identified the presence of the following chemicals: acetone, benzene, 2-butanone, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, carbon tetrachloride, ethylbenzene, 4-methyl-2-pentanone, methylene chloride, naphthalene, styrene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, Arochlor 1254, and xylenes.

The two primary hydrogeological units beneath the Gulfco site are the Chicot and Evangeline aquifers. The shallower Chicot aquifer is subdivided into two zones: the Lower and Upper Chicot. The Upper Chicot is comprised of interconnected sands that are found within 300 ft below ground surface. Ground water flow in the aquifer is reported to be to the southwest. A shallow, briny ground water zone exists within a few feet of the surface.

A number of chemicals have been detected in the uppermost ground water at the site, including benzene, carbon disulfide, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloropropane, ethylbenzene, methylene chloride, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 4-methyl-2-pentanone, trichloroethene, vinyl chloride, and xylene. Some of the chemical concentrations are greater than 10 percent of their solubility in water; therefore, the presence of nonaqueous-phase liquid is anticipated.

On 2 September 2002, EPA proposed to add the Gulfco site to the National Priorities List of Superfund sites (see Federal Register Listing FRL-7490-4, Volume 68, No. 83, Pages 23094-23101, Proposed Rule No. 39). The Final National Priorities List listing for the site was signed on 30 May 2003.

1.2.2 Scope of Work

The Scope of Work covered by this HSP includes, but is not limited to, health and safety hazards anticipated for field activities including:

- Perform oversight and document PRP RI/FS field activities
- Collect split soil, sediment, ground water, surface water, fish tissue, and biota samples.

1.2.3 Potential Constituents of Concern

A brief summary of the potential constituents of concern that may be encountered during

activities associated with this project are described below:

- Volatile organic compounds (VOCs)
  - 1,1-dichloroethane, 1,1 dichloroethene, 1,1,1-trichloroethane, 1,2-dichloroethane, 1,2-dichloropropane, 2-butanone, acetone, benzene, carbon disulfide, carbon tetrachloride, chloroform, methylene chloride, tetrachloroethene, trichloroethene, and vinyl chloride (see Section 1.2.1)
  - Some of the chemical concentrations are greater than 10 percent of their solubility in water; therefore, the presence of non-aqueous phase liquid is anticipated.
- Semivolatile organic compounds (SVOCs)
- Organochlorine pesticides and polychlorinated biphenyls (PCBs)
  - Arochlor 1254 (see Section 1.2.1)
- Arsenic and lead

1.3 HEALTH AND SAFETY PLAN ORGANIZATION

This HSP presents the approach to safety during execution of the project activities conducted at the site. This section presents an introduction and outlines the report organization. Section 2 summarizes the project management team. Section 3 outlines the hazard communications and environmental monitoring during field operations. Section 4 presents the required employee training. Section 5 details personal protective equipment (PPE). Section 6 summarizes emergency response reactions to site contingencies. Section 7 outlines site controls and work zones.

Prior to entering the site, this HSP must be reviewed and an agreement to comply with the requirements must be signed by all EA personnel (Appendix A). Personnel onsite will be informed of the site emergency response procedures and any potential health and safety hazards associated with site operations.

2. PROJECT MANAGEMENT

This section discusses the project management roles and responsibilities for the Gulfco site.

2.1 KEY PERSONNEL

Table 1 contains information on key project personnel.

TABLE 1 PROJECT PERSONNEL

Name	Position	Work Phone	Cell Phone
Gary Miller	EPA Task Order Monitor	214-665-8318	---
Luis Vega	Project Manager	972-459-5040	214-280-9031
Mark Kelly	Field Team Leader (drilling)	972-315-3922	214-402-6033
Beronica Lee-Brand	Field Team Leader (environmental)	512-821-2765	646-209-8217
Doug McReynolds	Field Team Leader (ecological)	972-315-3922	214-680-9073
Doug McReynolds	Site Health and Safety Officer	972-315-3922	214-680-9073
Fritz Meyer	Program Manager	410-527-2412	410-371-6036
Pete Garger, CIH	Corporate Health and Safety Director	410-527-2425	410-790-6338

2.2 RESPONSIBILITIES

Clear lines of authority will be established for enforcing compliance with the health, safety, and contingency procedures consistent with industry policies and procedures.

Designated EA personnel are responsible for implementation of the HSP during field activities. This includes field supervision; enforcing safe work practices and decontamination procedures (if needed); ensuring proper use of PPE; communicating site safety program modifications and requirements to site personnel; proper reporting of injuries, illnesses, and incidents to the appropriate internal and external organizations; and containing and controlling the loss of potentially hazardous materials to soil, air, and surface/ground water during all phases of RI/FS oversight activities.

In the event of an onsite injury, occupational illness, near miss, or environmental contamination incident involving EA personnel, the following organizations/individuals will be notified as appropriate:

- Field Team Leader/Site Health and Safety Officer
- Project Manager
- Corporate Health and Safety Director
- Program Manager.

2.2.1 Project Manager

The ***Project Manager*** has overall responsibility for site activities and will be the primary contact during field activities. The Project Manager will regularly confer with site personnel regarding health and safety compliance.

2.2.2 Corporate Health and Safety Director

The ***Corporate Health and Safety Director*** has overall project responsibility for the development and implementation of this HSP and conformance with project requirements. The Corporate Health and Safety Director will act in an advisory capacity to the Field Team Leader and site personnel for project-specific health and safety issues.

2.2.3 Site Health and Safety Officer

The ***Site Health and Safety Officer*** is responsible for coordination of onsite contingency operations, as well as the implementation of the EA Site Health and Safety Program. The Site Health and Safety Officer will be onsite throughout the project and will be responsible for daily compliance with site health and safety requirements (including PBW requirements [PBW 2005]), including air monitoring, establishing decontamination protocols, conducting and documenting safety meetings, and ensuring that all EA personnel review the HSP and sign the HSP Review Record (Appendix A), as applicable.

In the event of an emergency situation involving EA personnel, the Field Team Leader/Site Health and Safety Officer will be responsible for initiating and coordinating emergency responses/contingency operations with the PBW site health and safety officer.

The Corporate Health and Safety Director, Field Team Leader, and Site Health and Safety Officer will have the authority to make on-the-spot corrections concerning health, safety, and environmental pollution infractions for EA field personnel only.

2.2.4 Field Team Leader

The ***Field Team Leader*** reports to the EA Project Manager and Corporate Health and Safety Director. The Field Team Leader will oversee and direct field activities and has day-to-day responsibility for ensuring implementation of the HSP. The Field Team Leader's responsibilities include, but are not limited to, providing technical support, evaluating onsite environmental monitoring results, coordinating site activities with PBW, communicating with offsite emergency responders, and coordinating activities of onsite and offsite emergency responders, as applicable.

2.2.5 Employee Responsibilities

EA employees are responsible for reading, understanding, and meeting the health and safety requirements contained in this HSP. A HSP Review Record sign-off sheet is provided

in Appendix A. Employees are required to implement these procedures when conducting daily operations. This will also include receiving appropriate training and medical monitoring (if required) and utilization of EA-provided health and safety equipment (to include all forms of PPE) to safely conduct site operations. Employees will review each task prior to commencement to consider the potential health and safety hazards, and the measures to be taken in the event of an emergency. Employees should know where material safety data sheets (MSDS), first aid supplies, and emergency equipment are maintained. The Field Team Leader/Site Health and Safety Officer should be notified of potential health and safety hazards, near-miss conditions, or incidents present on the job site or unusual effects believed to be related to hazardous chemical exposures. Failure to follow established health and safety procedures could result in immediate dismissal from the site and, if repeated, a potential loss of employment.

2.2.6 Subcontractors

For this site, EA personnel will only be conducting oversight and split sampling activities; onsite subcontractor support is not anticipated.

2.2.7 Visitors

Site visitors will be required to comply with the requirements for visitors as outlined in the PBW HSP (PBW 2005).

3. HAZARD EVALUATION AND CONTROL

EA personnel will not be conducting any intrusive activities while on site. The following is a list of activities to be completed for this project:

1. Perform oversight and document PRP RI/FS field activities
2. Collect split soil samples
3. Collect split ground water samples
4. Collect split surface water samples and
5. Collect split sediment, fish tissue, and biota samples.

3.1 PHYSICAL AND BIOLOGICAL HAZARDS

Potential physical hazards and appropriate control measures are summarized in Table 2 for each of the above-listed tasks.

TABLE 2 PHYSICAL AND BIOLOGICAL HAZARD EVALUATION AND CONTROL

Hazard	Activities	Control Measures
Biological	1, 2, 3, 4, 5	Potential hazard—poison ivy, poison oak, snakes, insect bites, and stings • Establish site-specific procedures for working around identified hazards • Avoid areas of heavy vegetation • Wear long-sleeve shirts, pants, and gloves • Use insect repellant as necessary.
Cold Stress	1, 2, 3, 4, 5	• Provide warm break area and adequate breaks • Provide non-caffeinated beverages • Promote cold stress awareness
Fire and Explosion	1, 2, 3, 4, 5	• Inform personnel of the locations of potential fire/explosion hazards • Identify subsurface utility lines, if possible • Establish site-specific procedures for working around flammable materials • Ensure that appropriate fire suppression equipment and systems are available and in good condition
Heat Stress	1, 2, 3, 4, 5	• Promote heat stress awareness • Provide cool break areas and adequate breaks • Provide non-caffeinated beverages
Heavy Equipment Operations	1, 2, 3	• Ensure that the operators are properly trained and equipment has been properly inspected and maintained • Establish equipment routes, traffic pattern, and site-specific safety measures • Assign spotters and inform of proper hand signals and protocols • Wear reflective vests while working around heavy equipment • Maintain safe distances from all heavy equipment • Lifting capacities and load limits of equipment will not be exceeded • Locate “kill-switch” of the drill rig to stop the rig in case of emergency • No activities during thunderstorms • Maintain line of sight with rig operator during activities
Noise	1, 2, 3, 4, 5	• Maintain safe distance from the noise-generating equipment • Implement hearing protection measures • Establish noise level standards for onsite equipment
Overhead Obstructions	1, 2, 3	• Wear hard hat • Reconnoiter work area and alert field personnel before execution of work
Motor Boat and Water Operations	1, 4, 5	• Ensure that the operators are properly trained and equipment has been properly inspected and maintained • Use life preserver when within 10 feet of water (as needed) • Have life preservers or flotation devices available for all personnel when on the water • Locate “kill-switch” of the boat to stop the motor in case of emergency • No activities during thunderstorms
Site Debris	1, 2, 3, 4, 5	• Trip/fall hazard—walk carefully • Wear proper PPE—hard hat, safety glass, and steel-toed boots • Flying debris—wear hard hat and safety glass • Work will be conducted only during daylight hours • Illumination requirements of 29 CFR 1910 will be satisfied if sufficient illumination is absent • Contact local utility company, if required
Utility Lines	2, 3, 5	• Identify and locate existing utilities prior to work • Contact local utility company, if required • Maintain safe distances from utility lines

The following section provides greater detail for particular physical hazards that may potentially be present during field activities. These physical hazards may include, but are not limited to:

- Fire/explosion
- Heat/cold stress
- Heavy equipment
- Noise
- Electrical
- Utilities
- Weather
- Biological
- Motor boat and water.

The site will be visually inspected for the presence of general safety hazards (e.g., trip/slip hazards, unstable surfaces or steep grades, vehicle and pedestrian traffic, sharp objects, and water/drowning) prior to beginning work. If hazards are identified, these hazards will be recorded and precautionary measures taken to prevent injury.

3.1.1 Fire/Explosion

The potential for fire and/or explosive conditions will exist. Workers must continuously monitor the work area for combustible or explosive gases when operations have the potential to generate sparks. Employees should always be alert for unexpected events, such as ignition of chemicals or sudden release of materials under pressure, and be prepared to act in these emergencies.

NOTE: Smoking is not allowed at any time within the work area.

Company-owned field vehicles will be equipped with a fire extinguisher. Employees must be trained in the proper use of fire suppression equipment. However, professionals should handle large fires that cannot be controlled with a fire extinguisher. The proper authorities should be notified in these instances.

3.1.2 Heat Stress and Heat-Related Illness

Effects of heat stress and illness are possible during the performance of field activities at the site. Injury from heat exposure may occur to persons working outdoors during a period of high temperature conditions. This is a major concern when personnel are working in PPE clothing. The body's principal means of cooling is through the evaporation of sweat. When personnel are working in PPE, sweat is trapped inside the clothing and cannot evaporate, thus raising the body's core temperature and resulting in a heat-related illness. Monitoring will commence at temperatures of 70°F and above when employees are wearing impervious full-body clothing.

Personnel should be familiar with the signs and symptoms of heat stress. These include:

- **Heat Cramps**—Painful contraction of voluntary muscles

- **Heat Exhaustion**—Dizziness, lightheadedness, slurred speech, rapid pulse, confusion, fainting, fatigue, copious perspiration, cool skin that is sometimes pale and clammy, and nausea

- **Heat Stroke**—Hot, dry, flushed skin; delirium; and coma (in some cases).

Resting frequently in a shaded area and consuming large quantities of fresh, potable water and electrolyte replenishing fluids (i.e., Gatorade) can prevent heat stress. If heat exhaustion symptoms are observed, the person will be required to rest in a shaded area and consume liquids. If symptoms are widespread or observed frequently, an appropriate work/rest regimen will be instituted. This may involve limiting the work period so that after 1 minute of rest, a person's heart rate does not exceed 110 beats per minute.

If the heart rate is higher than 110 beats per minute, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the heart rate is 110 beats per minute at the beginning of the next rest period, then the next cycle should be shortened by another 33 percent. Resting heart rate should be determined prior to starting onsite activities. A healthy individual's resting heart rate is usually 60-72 beats per minute. If symptoms of heat stroke are observed, the victim will be cooled immediately and transported to the nearest hospital. Workers should not hesitate to seek medical attention if heat stroke is suspected.

3.1.3 Effects of Cold Exposure

Effects of cold exposure are possible during the performance of field activities at the site.

Cold stress can be caused by exposure to temperatures at or below freezing or to excessive wind at higher temperatures. When an individual's body temperature falls below 98.6°F, cold stress injuries may occur. The body's cells are composed primarily of water that can freeze when exposed to low temperatures, resulting in cell damage or death. Primary effects of cold exposure include frostnip, frostbite, and hypothermia:

- **Frostnip** commonly occurs as a result of surface tissue freezing at the tips of the ears, nose, cheeks, chin, fingertips, and toes. Symptoms of frostnip include the appearance of white shiny skin. If frostnip occurs, gradually warm the affected areas with a warm hand or warm breath. Do not rub.

- **Frostbite** occurs as the result of surface and subsurface tissues freezing. Symptoms include erythema, blistering, throbbing pain, numbness, and swelling. If frostbite is suspected, move to a warm location and provide slow and steady re-warming.

- **Hypothermia** is the result of prolonged exposure to cold temperatures and body heat loss. Symptoms of hypothermia include body shivers, slow reaction time, mental confusion, glassy eyes, low body temperature, low pulse rate, and difficult respiration. Death can occur within 2 hours if not treated. If hypothermia is suspected, move to a warm location, remove wet and/or cold clothing, and provide re-warming as rapidly as

possible. Provide both external heat (fire, electric blanket, body heat) and internal heat (hot liquids for conscious victims). Seek medical attention immediately.

In order to avoid potential cold stress, field personnel should take precautions against the cold and maintain body temperatures. This is most easily done by wearing the proper protective clothing, including insulated head and ear covering, gloves, insulated socks and/or boots, and insulated clothing in layers. If the potential exists for clothing to become wet, then the outer layer of clothing should be water repellent. Clothing that becomes wet with either water or sweat should be replaced immediately. In addition, the work area can be protected by the placement of vehicles or tarps to reduce wind chill.

3.1.4 Heavy Equipment

The use of heavy equipment (e.g., drill rigs, generators, compressors) may pose safety hazards to site workers. Only trained, experienced personnel will conduct heavy equipment work. If possible, personnel must remain outside the turning radius of large, moving equipment. At a minimum, personnel must maintain visual contact with the equipment operator. No guards, safety appliances, or other devices may be removed or made ineffective unless repairs or maintenance are required, and then only after power has been shut off and locked out. Safety devices must be replaced once repair or maintenance is complete. Exhaust from equipment must be directed so that it does not endanger workers or obstruct the view of the operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc.

Personnel are required to stand away from any vehicle being loaded or unloaded to avoid being struck by falling material. Personnel will wear highly visible, reflective vests while onsite to aid in being seen by equipment operators.

3.1.5 Noise

Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and can interfere with communication. If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 dBA (decibels on the A-weighted scale), hearing protection will be selected with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise levels to or below the permissible values. Therefore, during field activities where workers are using heavy equipment, hearing protection must be utilized.

3.1.6 Electrical

Overhead power lines, electrical wiring, electrical equipment, and buried cables pose risks to workers of electric shock, burns, muscle twitches, heart fibrillation, and other physical injuries, as well as fire and explosion hazards. Workers will take appropriate protective measures when working near live electrical parts, including inspection of the work area, to identify potential

spark sources, maintenance of a safe distance, proper illumination of the work areas, provision of barriers to prevent inadvertent contact, and use of nonconductive equipment. If overhead lines cannot be de-energized prior to the start of work, a 10-ft distance must be maintained between overhead energized power lines with a voltage of 50 kV and elevated equipment parts. This distance will be increased 4 in. for every 10 kV greater than 50 kV. For example, workers must maintain a distance of 11.7 ft from energized power lines with a voltage of 100 kV.

3.1.7 Utilities

Underground utilities pose hazards to workers involved in drilling and other invasive operations such as excavation. These hazards include electrical hazards, explosion, and asphyxiation, as well as costly and annoying hazards associated with damaging communication, sewer, and water lines. Prior to commencement of invasive operations, utility companies will be contacted to inspect and flag the area of investigation, if required.

Personnel should be aware that although an area may be cleared, it does not mean that unanticipated hazards will not appear. Workers should always be alert for unanticipated events such as snapping cables, drilling into unmarked underground utilities, and drilling into a heavily contaminated zone, etc. Such occurrences should prompt involved individuals to halt work immediately and take appropriate corrective measures to gain control of the situation.

3.1.8 Weather

Weather conditions should always be taken into consideration. Heavy rains, electrical storms, high winds, and extreme temperatures, for example, may create extremely dangerous situations for employees. Equipment performance may also be impaired because of inclement weather. Whenever unfavorable conditions arise, the Site Health and Safety Officer will evaluate both the safety hazards and ability of the employees to effectively perform given tasks under such conditions. Activities will be halted at their discretion.

Wind direction should be accounted for when positioning equipment at sampling locations. If exposure to organic vapors is anticipated, workers should locate upwind of sampling points. Wind direction often changes abruptly and without warning, so personnel should always be prepared to reposition, if necessary.

3.1.9 Biological

Any grassy, freshwater marsh, or wetland area at the site may be territory for deer ticks or other insects, which may carry Lyme disease. Precautions that will be taken to reduce these hazards are clearing high vegetation within the work zones, minimizing movement through uncleared areas, wearing long pants while onsite, applying insect repellant to clothing, and checking employees' clothing and bodies for ticks periodically. Workers should be particularly sensitive to the freshwater marsh and wetland areas to ensure that there is minimal disturbance of the wetlands during sampling activities.

Due to the location of the site, the known animal species that may potentially be encountered include squirrels, skunks, rats, deer, mice, snakes, raccoon, etc. These animals are typically afraid of human beings and will stay away from workers. However, any animal that acts aggressively should be considered dangerous due to the possibility of rabies or potential infections from bites or punctures.

Poisonous plants (poison ivy, poison oak, poison sumac, etc.) may potentially be encountered at the site. Precautions should be taken to minimize exposure to plants by clearing vegetation, when necessary, within the work zone and wearing snake boots (if necessary), long-sleeve shirts, pants, safety glasses, and gloves. In addition to the biological and plant life hazards listed above, the following biohazard may be present.

During site operations, EA employees may be exposed to blood and body secretions in support of emergency response operations where site personnel have been injured, and require first aid and/or cardiopulmonary resuscitation (CPR) (see Section 6.5). Due to the potential that blood and body secretions may contain disease-causing organisms such as the Hepatitis B Virus, and Human Immunodeficiency Virus, employees electing to provide first aid and CPR support (until the arrival of a competent onsite medical responder) should take appropriate measures to reduce or eliminate their potential for contact and exposure. The concept of "Universal Precautions" will be followed, assuming a potential hazard is present. Employees providing first aid support should wear the appropriate PPE to prevent or reduce their potential for contact and exposure. This will typically be accomplished through the use of nitrile gloves, splash-proof eye protection, and the use of mouth-to-mouth guards and proper cleanup (good sanitation and hygiene) following the incident. The hands and face should be thoroughly washed with water and antiseptic soap or cleanser following an incident, or antiseptic containing disposable towelettes used in the absence of appropriate field washing facilities. The Program Health and Safety Officer should be notified of potential employee exposure to blood and body fluids while conducting work in support of this project.

3.1.10 Motor Boat and Water

The use of motor boats may pose safety hazards to site workers. Only trained, experienced personnel will be allowed to operate motor boats during sampling activities. In addition, samples will be collected in the Intracoastal Waterway, which has large vessel/barge traffic. Motor boating activities will comply with all Texas Department of Transportation and U.S. Coast Guard rules and regulations pertaining to the operation of vessels on the Intracoastal Waterway. The EA Corporate Vessel Operations Manual (EA 2004) must be reviewed by all personnel involved in motor boat or sampling activities on the Intracoastal Waterway.

3.2 CHEMICAL HAZARDS

This section provides information on hazard communication, chemical hazards, and equipment for equipment calibration and operation.

3.2.1 Hazard Communication

The Site Health and Safety Officer will keep a MSDS onsite for each chemical, if any, brought onsite by EA during field activities. Chemicals brought onsite must be labeled in accordance with OSHA Hazard Communication Requirement 29 CFR 1910.

3.2.2 Chemical Hazards

Assumptions regarding potential chemical constituents were made by reviewing information from past investigation activities conducted at the site. The following chemicals were either detected at concentrations that exceeded potential human health risk-based levels or they were determined to be constituents of concern from the list of chemicals identified in Section 1.2.1.

Any newly identified constituents detected from the sampling activities will be evaluated and, if required, this HSP will be amended to address any new chemical hazards. In the absence of sufficient data, the concept of "Universal Precautions" will be followed, assuming that all potential constituents of concern are present while sampling. Concentrations detected are relatively low, and the likelihood of adverse health effects should be considered equally low.

Potential chemical hazards and their evaluation are provided in Table 3 for each of the identified activities.

TABLE 3 CHEMICAL HAZARD EVALUATION

Activity No.	Compound	Exposure Limits (Time Weighted Average)		Routes of Exposure	Symptoms (Acute)	Dermal Hazard
		Permissible Exposure Limit	Threshold Limit Value			
1, 2, 5	**Arsenic** in soil Metal: Silver-gray or tin-white, brittle, odorless solid	0.010 mg/m^3	0.010 mg/m^3	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, potential occupational carcinogen	Yes
1, 2, 3	**Benzene** in storage tank area and ground water Colorless to light yellow liquid with an aromatic odor	1 parts per million (ppm)	0.5 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, nose, respiratory system, dizziness, headache, nausea, staggered gait, anorexia, weakness/exhaustion, dermatitis, bone marrow depression, potential occupational carcinogen	Yes
1, 2, 5	**Benzo(a)anthracene** in soil Black or dark-brown amorphous residue	0.2 mg/m^3 benzene-soluble fraction	0.2 mg/m^3	Inhalation, skin and/or eye contact, ingestion	Dermatitis, bronchitis, potential occupational carcinogen	Yes

Activity No.	Compound	Exposure Limits (Time Weighted Average)		Routes of Exposure	Symptoms (Acute)	Dermal Hazard
		Permissible Exposure Limit	Threshold Limit Value			
1, 2, 5	**Benzo(a)pyrene** in soil Black or dark-brown amorphous residue	0.2 mg/m^3 benzene-soluble fraction	0.2 mg/m^3	Inhalation, skin and/or eye contact, ingestion	Dermatitis, bronchitis, potential occupational carcinogen	Yes
1, 2, 5	**Benzo(b)fluoranthene** in soil Black or dark-brown amorphous residue	0.2 mg/m^3 benzene-soluble fraction	0.2 mg/m^3	Inhalation, skin and/or eye contact, ingestion	Dermatitis, bronchitis, potential occupational carcinogen	Yes
1, 3	**Carbon disulfide** in ground water Colorless liquid with a pleasant odor, much like chloroform	20 ppm	10 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes and skin, dizziness, headache, poor sleep, lassitude, anxiety, anorexia, psychosis, Parkinson-like syndrome, dermatitis	Yes
1, 2, 3	**Chloroform** in storage tank area and ground water Colorless liquid with a pleasant odor	50 ppm (240 mg/m^3) Ceiling	10 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, throat, dizziness, mental dullness, nausea, confusion, headache, weakness/exhaustion, anesthesia, enlarged liver, potential occupational carcinogen	Yes
1, 3	**1,1-Dichloroethene** in ground water Colorless liquid or gas (above 89^{o}F) with a mild, sweet, chloroform-like odor	None	5 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, throat, dizziness, headache, nausea, difficulty breathing, liver and kidney distress, pneumonitis, potential occupational carcinogen	Yes
1, 2, 3	**1,1,1-Trichloroethane** in storage tank area and ground water Colorless liquid with a mild, chloroform-like odor	350 ppm (1900 mg/m^3)	350 ppm	Inhalation, skin and/or eye contact, ingestion	Irritation of eyes, skin, headache, weakness/exhaustion, CNS depression, poor equilibrium, dermatitis, cardiac arrhythmias, liver damage	Yes
1, 2, 3	**1,2-Dichloroethane** in storage tank area and ground water Colorless liquid with a pleasant, chloroform-like odor (becomes acidic and darkens in color as it decomposes)	50 ppm, 100 ppm Ceiling, 200 ppm (5-min max peak in any 3 hours)	10 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, corneal opacity, CNS depression, nausea, vomiting, dermatitis, liver, kidney, CNS damage, potential occupational carcinogen	Yes

Activity No.	Compound	Exposure Limits (Time Weighted Average)		Routes of Exposure	Symptoms (Acute)	Dermal Hazard
		Permissible Exposure Limit	Threshold Limit Value			
1, 2, 5	**Lead** in soil Gray in pure form	0.05 mg/m^3	0.15 mg/m^3	Inhalation, skin and/or eye contact, ingestion	Lassitude, insomnia, facial pallor, anorexia, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis of wrists/ankles, irritation to eyes	Yes
1, 2, 3	**Methylene Chloride** in storage tank area and ground water Colorless liquid with a chloroform-like (It is a gas above 104°F)	25 ppm	5 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, weakness/exhaustion, drowsiness, dizziness, numbness, tingling limbs, nausea, potential occupational carcinogen	Yes
1, 2, 3	**Tetrachloroethene** in storage tank area and ground water Colorless light with a chloroform-like odor (may be dyed blue)	100 ppm, 200 ppm Ceiling, 300 ppm (5-min max peak in any 3 hours)	25 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, throat, respiratory system, nausea, flush face, neck, dizziness, incoordination, headache, drowsiness, skin redness, liver damage, potential occupational carcinogen	Yes
1,2, 3	**Trichloroethene** in storage tank area and ground water Colorless light with a chloroform-like odor (may be dyed blue)	100 ppm, 200 ppm Ceiling, 300 ppm (5-min max peak in any 3 hours)	100 ppm	Inhalation, skin absorption, skin and/or eye contact, ingestion	Irritation of eyes, skin, headache, visual disturbance, weakness/exhaustion, dizziness, tremor, drowsiness, nausea, vomiting, dermatitis, cardiac arrhythmias, paresthesia (tingling or numbing sensation), liver injury, potential occupational carcinogen	Yes
1, 3	**Vinyl Chloride** in ground water Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations	1 ppm, 5 ppm Ceiling (15 min)	1 ppm	Inhalation, skin and/or eye contact, ingestion	Weakness/exhaustion, abdominal pain, GI bleeding, enlarged liver, pallor or cyan of extremities, frostbite (liquid), potential occupational carcinogen	Yes

3.2.3 Chemicals for Equipment Calibrations and Operations

The following chemicals may be supplied by the primary field program team:

- Hydrochloric acid (sample preservative)

- Nitric acid (sample preservative)

Laboratory supplied sample jars with preservatives will be used to prevent handling of preservatives in the field.

As discussed in Section 4.3.3, the Site Health and Safety Officer will maintain a current alphabetical file of complete MSDSs for each hazardous substance stored or used at the work site by EA personnel.

3.3 SAFE WORK PRACTICES

Safe work practices that must be followed by site workers include:

- Cleaning of hands immediately, or as soon as feasible, after removal of gloves by the use of antiseptic cleanser in conjunction with clean paper towels.

- Washing of hands and any other exposed skin with antiseptic cleanser and water immediately or as soon as feasible following contact with blood or other potentially infectious material; staff will also wash hands:
  - After removing PPE
  - After handling potentially infectious materials
  - After cleaning or decontaminating equipment
  - After using the bathroom
  - Before eating
  - Before and after handling or preparing food.

- Eat, drink, and smoke only in those areas designated by the Site Health and Safety Officer. These activities will not take place within work zones.
- In the event a potential for chemical contamination exists onsite, employees will wash and conduct appropriate decontamination activities.

- Wear appropriate PPE all the time.

- Defective PPE must be repaired or replaced immediately.

- Each employee required to take prescription drugs will notify the Field Team Leader and/or Site Health and Safety Officer/Emergency Coordinator prior to the start of work. Controlled or unauthorized drugs will **not** be permitted onsite at any time.

- Procedures for sampling and/or analysis will be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets. The slow and careful transfer of all potentially infectious liquids will accomplish this.

- Potentially infectious materials will be placed in a clearly marked container which prevents leakage during collection, handling, and transporting.

- If outside contamination of the primary container occurs, the primary container will be placed within a second container, which prevents leakage during handling and transporting.

- Equipment that may become contaminated will be decontaminated as necessary.

3.4 ENVIRONMENTAL MONITORING

Environmental monitoring will be conducted by PBW staff, as applicable. Site-specific monitoring requirements and action levels are provided in the PBW HSP (PBW 2005).

3.5 BUDDY SYSTEM

Work at the site will be scheduled to minimize the amount of time an employee works alone at any time. Each worker will maintain visual contact or communication with another worker (to include PBW and EPA staff) during intrusive activities and/or in the exclusion zone. The buddy system will ensure against an employee becoming stressed without a co-worker being aware of his or her condition. Workers must "watch out" for each other while working close to potential chemical and physical hazards. In situations where line of sight may be limited, radio or telephone communication must be maintained at a minimum.

If a telephone is not immediately available for emergency use, an alarm or horn should be sounded to summon further help from others on the job site.

4. EMPLOYEE TRAINING

This section discusses OSHA-mandated training, medical surveillance, and hazard communication requirements for the Gulfco site.

4.1 SITE PERSONNEL

All onsite personnel who may be exposed to hazardous conditions, including EA and subcontractor personnel, as well as site visitors who will participate in onsite activities, will be required to meet the training requirements outline in 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response). Training will include:

- Minimum of 40 hours of initial offsite instruction
- Minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor
- 8-hour "refresher" training period annually
- Additional training that addresses unique or special hazards/operational requirements
- At least one person onsite at any time should be currently trained in first aid/cardiopulmonary resuscitation.

Onsite management and supervisors who are directly responsible for or who supervise employees will receive at least 8 additional hours of specialized management training.

Copies of training certificates and dates of attendance will be available through the Site Health and Safety Officer upon request.

4.1.1 Subcontractor Training

EA does not anticipate onsite subcontractor support during field oversight activities.

4.1.2 Pre-Entry Orientation Session

— Prior to entering the site, personnel will attend a pre-entry orientation session presented by the PBW Site Health and Safety Officer.

A question and answer period will also be provided.

EA staff will also attend the "tailgate" safety meeting conducted by PBW each day prior to the start of work. These tailgate meetings will discuss the specific activities that will be conducted that day, the hazards involved, and the methods to be used to mitigate the hazards. Any previous

incidents or changes in procedures will also be addressed during these meetings.

4.2 MEDICAL SURVEILLANCE

Hazardous waste site workers must have satisfactorily completed a comprehensive medical examination by a licensed physician within 12 months (or 24 months pending physician's approval) prior to the start of site operations. This information will be available onsite.

A licensed physician who is certified in Occupational Medicine by the American Board of Preventative Medicine will review medical surveillance protocol and examination results. Medical surveillance protocols will comply with 29 CFR 1910.120. The content of medical examinations will be determined by the attending physician and will be based upon the guidelines in the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.* Medical examinations and consultations will be provided for employees covered by this program on the following schedule:

- Prior to field work assignment
- At least annually for employees covered by the program (or biennial with the approval of the occupational physician)
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not been examined within the past 6 months
- As soon as possible upon the development of signs or symptoms that may indicate an overexposure to hazardous substances or other health hazards, or that an unprotected person has been exposed in an emergency situation
- More frequently if the physician deems such examination necessary to maintain employee health.

An accurate record of the medical surveillance will be maintained for each employee for a period of no less than 30 years after the termination of employment. Records will be managed and maintained per recordkeeping provisions of EA's Safety and Health Program Manual. Records must include at least the following information about the employee:

- Name and social security number
- Physician's written opinions, recommendations, limitations, and test results
- Employee medical complaints related to hazardous waste operations
- Information provided to the physician by the employee concerning possible exposures, accidents, etc.

4.3 HAZARD COMMUNICATION PROGRAM

As mandated by OSHA, EA will follow the hazard communication program implemented by PBW at the Gulfco site, as discussed in the following subsections.

4.3.1 Hazard Communication

The objective of instituting a Hazard Communication Program is to ensure that hazards associated with the site and with chemicals brought onsite by EA or PBW are evaluated, and that information concerning these hazards is transmitted to site employees. Site personnel include EA and PBW employees, manufacturer's representatives, or local agency employees, and other workers who observe or perform services onsite. Employee awareness of chemical identities, health and physical hazards, properties, and characteristics is essential to safely handle chemicals and to minimize potential hazards. The Hazard Communication Program must follow OSHA requirements listed in 29 CFR 1910.120.

4.3.2 Hazard Communication Labeling

The Site Health and Safety Officer will ensure that EA containers are properly labeled and that workers know the contents of containers. Container labels will contain, at a minimum, information on name of product on container, chemical(s) in product, manufacturer's name and address, protective equipment required for the safe handling of the product, and first aid procedures in case of overexposure to product contents.

4.3.3 Material Safety Data Sheets

The Site Health and Safety Officer will maintain a current alphabetical file of complete MSDSs for each hazardous substance stored or used at the work site by EA. The file must be easily accessible to all employees.

4.3.4 Hazard Communication Training

EA site workers and visitors will familiarize themselves with PBW's Hazard Communication Program, their legal rights under the program, location of the chemical inventory, and location of the MSDS file. Prior to site work or potential exposure to hazardous substances, the PBW Site Health and Safety Officer will describe hazardous substances routinely used and provide information about:

- Nature of potential chemical hazards
- Appropriate work practices
- Appropriate control programs
- Appropriate protective measures
- Methods to detect presence or release of hazardous substances
- Emergency procedures.

5. PERSONAL PROTECTIVE EQUIPMENT

This section describes the PPE requirements for field activities at the Gulfco site.

5.1 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Based upon currently available information and the nature of the anticipated tasks, the level of protection selected for all the work tasks is Level D.

In the event that potential chemical hazards are identified, the level of protection may be upgraded appropriately to the potential hazard conditions by the PBW Site Health and Safety Officer. Only those personnel identified and qualified for hazardous waste work as defined in 29 CFR 1910.120 will be allowed to upgrade beyond Level D or provide support of hazardous material/ substance contingency operations. Only the EA Site Health and Safety Officer, in conjunction with the PBW Site Health and Safety Officer, will be allowed to approve PPE upgrade for EA personnel beyond Level D and site re-entry for the purpose of hazardous conditions assessment.

The following is a list of the Level D PPE components for the minimum level of protection authorized for use during this project:

- Coveralls or appropriate work clothes
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (if overhead hazards are present)
- Chemical resistant gloves (neoprene or nitrile) as appropriate to prevent contact during sample collection activities
- Leather work gloves (as needed)
- Safety glasses with side shields and face shield (as needed) or impact-resistant chemical goggles; safety glasses, goggles, and face shields will meet American National Standards Institute requirements for impact resistance and safety
- Hearing protectors (as needed) (NOTE: Hearing protection must be available and must be worn whenever noise levels exceed 85 dBA [noise level at which a shouted conversation cannot be understood at a 1-ft distance]).

5.2 MAINTENANCE AND IN-USE INSPECTION OF PERSONAL PROTECTIVE EQUIPMENT

Effective use of protective equipment requires that the equipment be properly used, maintained, and inspected periodically during the day. Site-specific issues and standard procedures will be

reiterated during pre-entry training. Gloves and body coverings will be regularly inspected and replaced promptly if torn. Disposable coveralls will be replaced daily at a minimum. Reusable gloves will be decontaminated whenever exiting the area.

6. EMERGENCY RESPONSE AND REACTION TO SITE CONTINGENCIES

This section details emergency response actions and provides site-specific emergency procedures.

6.1 EMERGENCY RECOGNITION

Prior to work startup, personnel must be familiar with emergency condition identification, notification, and response procedures.

The emergency telephone numbers for local emergency response and reporting organizations are provided in Table 4. Figure 1 shows directions to the nearest hospital.

TABLE 4 EMERGENCY TELEPHONE NUMBERS

Organization	Phone Number
Emergency – Ambulance	911
Non-Emergency	979-297-4411
Freeport Fire Department	911 or 979-239-1211
Freeport Police Department	911 or 979-239-1211
Freeport City Hall	979-233-2111
Hospital – Brazosport Memorial Hospital	General: 979-297-4411 Emergency: 911 100 Medical Drive Lake Jackson, Texas 77566
Texas Commission on Environmental Quality	512-239-1000 (Austin, TX)

Directions to Hospital: From site, (906 Marlin Lane, Freeport, TX 77541), travel southwest on Marlin Lane approximately 0.7 mile. The road becomes Tarpon Lane; travel on Tarpon Lane for approximately 0.2 mile. Turn right (west) on Sailfish Street for approximately 0.1 mile and turn right (north) onto SR-332. Travel on SR-332 for approximately 11.1 miles and turn left (west) onto Plantation Drive. Travel on Plantation Drive for approximately 0.7 mile. The road name changes to Medical Drive. Arrive at 100 Medical Drive, Lake Jackson, Texas.

EA and DBS&A Project Personnel

Name	Position	Work Phone	Cell Phone
Mark Kelly	Field Team Leader (drilling)	972-315-3922	214-402-6033
Beronica Lee-Brand	Field Team Leader (environmental)	512-821-2765	646-209-8217
Doug McReynolds	Field Team Leader (ecological)	972-315-3922	214-680-9073
Doug McReynolds	Site Health and Safety Officer	972-315-3922	214-680-9073
Luis Vega	Project Manager	972-459-5040	214-280-9031
Fritz Meyer	Program Manager	410-527-2412	410-371-6036
Peter Garger, CIH	Program Health and Safety Director	410-527-2425	410-790-6338

EPA Project Personnel			
Name	Position	Work Phone	Cell Phone
Gary Miller	EPA Region 6 Task Order Monitor	214-665-8318	---

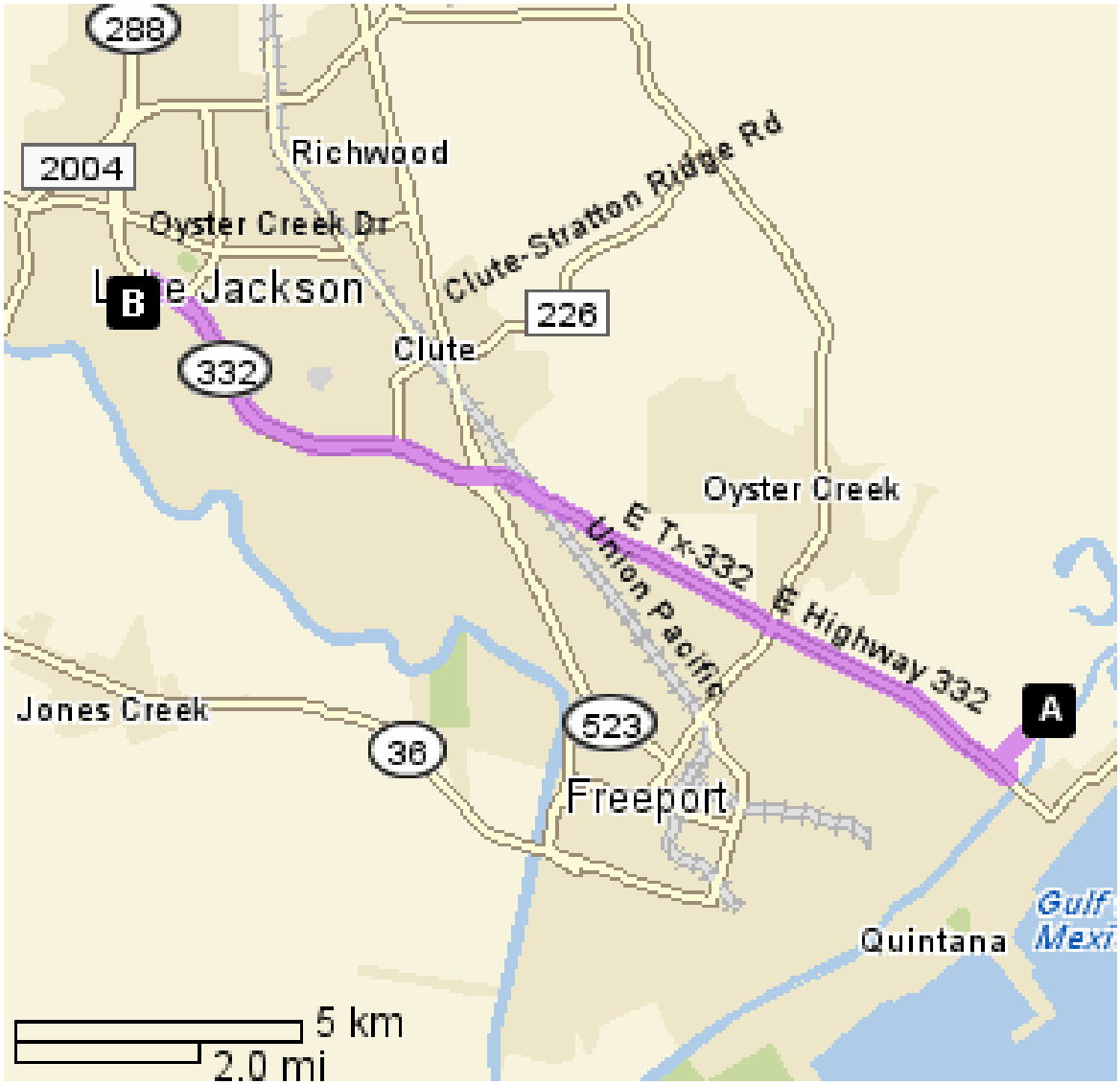


Figure 1. Route to hospital.

The Field Team Leader/Site Health and Safety Officer will rehearse/review emergency procedures and/or applicable site contingencies initially during PBW's site orientation. Offsite emergency personnel will ultimately handle onsite emergencies. Initial response and first aid treatment, however, will be provided onsite.

Person(s) identifying an accident, injury, emergency condition, or a scenario requiring implementation of a response in support of this HSP will immediately take actions to report the situation to the Field Team Leader/Site Health and Safety Officer. Notification may take place by runner, hand-held radio, or cell phone. The Field Team Leader/Site Health and Safety Officer will initiate the required response based upon the type of incident, following the procedures contained in this HSP and the PBW HSP (PBW 2005). Chain-of-command and sign-in sheets for personnel on the site will be established at the beginning of each work day to ensure personnel are accounted for and who will take control should the Field Team Leader/Site Health and Safety Officer become injured. The following items constitute those site conditions requiring an emergency response or contingency action in accordance with this HSP:

- Fire/explosion
- Heavy equipment accident
- Natural disaster
- Medical emergency
- Discovery of unanticipated hazards (e.g., unmarked utility lines, heavily contaminated material).

Follow-on operations to evaluate and control the source of fire, explosion, and hazardous material incidents will occur only after discussion with PBW and the EA Project Manager, Field Team Leader/Site Health and Safety Officer, and Program Health and Safety Officer, along with EPA and PBW personnel.

The Field Team Leader/Site Health and Safety Officer will act as the emergency coordinator at the site to coordinate onsite activities and contingencies with PBW and outside response organizations. If the Field Team Leader is unable to act as the Emergency Coordinator, then the authority to take action will be transferred to the other designee, as indicated in the daily updated chain-of-command.

6.2 PRE-EMERGENCY PLANNING

The Site Health and Safety Officer will contact the PBW Site Health and Safety Officer and/or applicable local emergency response organizations contained in Table 4 prior to beginning of the project to identify the emergency response requirements and commitments required to support this project. The Project Manager, or designee, will contact those local authorities potentially required to respond in the event of an onsite emergency incident or contingency. This notification will inform each applicable agency of the starting date, anticipated scope of work, and existence of the HSP. A copy of the HSP will be made available to each emergency response agency upon request to the Project Manager. Emergency activities will be coordinated (as applicable) with the local emergency planning committee, as required in accordance with Superfund Amendments and Reauthorization Act Title III requirements.

6.3 OPERATIONS SHUTDOWN

The Site Health and Safety Officer may mandate operations shutdown in coordination with PBW and EPA. Conditions warranting work stoppage will include (but are not limited to):

- Fire
- Explosion
- Uncovering potentially dangerous buried hazardous materials
- Conditions immediately dangerous to life and health or the environment
- Potential for electrical storms
- Treacherous weather-related conditions
- Limited visibility
- Air contaminant concentrations in excess of the action levels contained in Table 3
- Upgrading of site security threat conditions.

6.4 PROCEDURES FOR HANDLING EMERGENCY INCIDENTS

In the event of an emergency, the information available at that time must be properly evaluated and the appropriate steps taken to implement the emergency response plan as outlined in the PBW HSP (PBW 2005). The Site Health and Safety Officer will assume command of the situation in coordination with PBW and EPA. He/she will alert the emergency management system per Table 4, and evacuate personnel to the pre-designated evacuation location. The Site Health and Safety Officer/Emergency Coordinator will make required notifications to include, but not be limited to, the EA Project Manager, EA Program Health and Safety Officer, EPA and PBW Points-of-Contact, and the appropriate federal and state agencies, as applicable.

Site personnel will have the capability of notifying emergency responders directly from the site using the onsite cell phone.

The Project Manager will complete and submit to EPA an Accident/Loss and Incident Report (Appendix C), within 24 hours. The following information will be provided when reporting an emergency:

- Name and location of person reporting
- Location of accident/incident
- Name and affiliation of injured party
- Description of injuries, fire, spill, or explosion
- Status of medical aid and/or other emergency control efforts
- Details of chemicals involved
- Summary of accident, including suspected cause and time it occurred
- Temporary control measures taken to minimize further risk.

This information is not to be released under any circumstances to parties other than those listed in this section and emergency response team members. Once emergency response agencies have

been notified, the Project Manager and EPA will be immediately notified.

6.5 MEDICAL EMERGENCIES

Personnel should always be alert for signs and symptoms of illnesses related to chemical, physical, and onsite health hazards. Severe injuries resulting from accidents must be recognized as emergencies and treated as such. At least one person currently trained in first aid/CPR must be present onsite during the field activities. This will normally be the Site Health and Safety Officer along with another designated person (EA and/or PBW).

In a medical emergency, the EA or PBW Site Health and Safety Officer must sound the emergency alarm, upon which work must stop and personnel must move to the predesignated evacuation location. **If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal.** Personnel currently trained in first aid will evaluate the nature of the injury, decontaminate the victim (if necessary), and initiate first aid assistance immediately and transport if appropriate. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately if needed.

Although not anticipated, victims who are heavily contaminated with toxic or dangerous materials must be decontaminated before being transported from the site. Decontamination will consist of removal of contaminated coveralls/clothing, and wrapping the victim in a sheet or other clothlike material. No persons will re-enter the site of injury/illness until the cause of the injury or symptoms has been determined and controlled. At no time will personnel transport victims to emergency medical facilities unless the injury does not pose an immediate threat to life and transport to the emergency medical facility can be accomplished without the risk of further injury. Emergency Medical Services will be used to transport serious injuries offsite unless deemed otherwise by the EA and PBW Site Health and Safety Officer/Emergency Coordinator.

The EA Site Health and Safety Officer/Emergency Coordinator must complete an Accident/Loss and Incident Report (Appendix C) and submit it to the Project Manager within 24 hours of the following types of incidents involving EA staff:

- Job-related injuries and illnesses
- Accidents resulting in loss or damage to property
- Accidents involving vehicles and/or vessels, whether or not they result in damage to property or personnel
- Accidents in which there may have been no injury or property damage, but which have a high probability of recurring with at least a moderate risk to personnel or property
- Near-miss incidents that could have resulted in any of the conditions defined above.

An accident that results in a fatality or the hospitalization of three or more employees must be reported within 8 hours to the U.S. Department of Labor through the Project Manager and Program Health and Safety Officer. Subcontractors are responsible for their reporting to the U.S. Department of Labor.

In order to support onsite medical emergencies, PBW will have first aid/emergency medical equipment available onsite, which may include the following:

- Portable emergency eyewash.
- One 20-lb multipurpose (ABC-rated) fire extinguisher
- An adequately stocked first aid kit
- Adequate supplies of potable water for decontamination, personal hygiene, and emergency use
- An emergency siren or horn
- Copy of PBW HSP (PBW 2005)

EA personnel will carry a cell phone and a copy of this EA HSP during onsite activities.

6.6 FIRE/EXPLOSION EMERGENCIES

Fire and explosion must be immediately recognized as an emergency. The PBW Site Health and Safety Officer must sound an emergency signal, and personnel must be decontaminated (if necessary) and evacuated to the pre-designated evacuation location. Only persons properly trained in fire suppression and other emergency response procedures will support control activities. Control activities will consist of the use of onsite portable fire extinguishers for limited fire suppression and employee evacuation. Upon sounding the emergency alarm, personnel will evacuate the hazard location and assemble at the designated site meeting area. Only the PBW Site Health and Safety Officer, or those site personnel trained in the use of portable fire extinguishers, will attempt to suppress a site fire. Small, multi-purpose dry chemical extinguishers will be maintained in each EA company-owned vehicle onsite. Fires not able to be extinguished using onsite extinguishers will require the support of the local Fire Department. The EA or PBW Site Health and Safety Officer should take measures to reduce injury and illness by evacuating personnel from the hazard location as quickly as possible. The EA or PBW Site Health and Safety Officer must then notify the local Fire Department. The EA or PBW Site Health and Safety Officer will determine proper followup actions. Site personnel will not resume work during or after a fire/explosion incident until the PBW Site Health and Safety Officer has directed that the incident is over and work may resume. During the incident, site personnel will remain outside the incident area and obey the instructions of the PBW or EA Site Health and Safety Officer.

6.7 EMERGENCY TELEPHONE NUMBERS

Communications will be via cell phone onsite or offsite telephone (if cellular coverage is poor in the area) for field personnel to contact offsite emergency response organizations. Refer to Table 4 for a listing of emergency telephone numbers.

6.8 CONTROL OF SITE PRODUCED AMBIENT NOISE LEVELS

Not Applicable

7. SITE CONTROL AND WORK ZONES

The following work zones will be established by PBW during implementation of the field activities as a means of site control. Work zones will be established, if needed, during the sampling, removal, and disposal of hazardous waste/sludge from the site, in accordance with the following:

- **Exclusion Zone (EZ)**—This area has either known or potential contamination and has the highest potential for exposure to chemicals onsite. The EZ will be the area immediately around the sampling activities. The outer boundary of the EZ is called the hotline. The hotline separates the area of known or potential contamination from the rest of the site. The hotline should initially be established by visually surveying the site for signs of contamination, providing sufficient space to protect personnel outside the zone, allowing an adequate area in which to conduct site operations, and for reducing the potential for contaminant migration. The hotline will be physically secured or clearly marked. During subsequent site operations, the boundary may be adjusted as more information becomes available. Persons who enter the EZ must wear the appropriate level of PPE for the degree and types of hazards present at the site.

- **Contamination Reduction Zone (CRZ)**—One access point to the EZ designated by the PBW Site Health and Safety Officer.

  The purpose of the CRZ is to reduce the possibility that the Support Zone (SZ) will become contaminated or affected by the site hazards. Because of both distance and decontamination procedures, the degree of contamination in the CRZ generally will decrease as one moves from the hotline to the SZ.

  The CRZ will be established outside the areas of known or potential contamination. Contamination Reduction Corridors, which are access control points between the EZ and CRZ, should be established for both personnel and heavy equipment. These corridors should consist of an appropriate number of decontamination stations necessary to address the contaminants of the particular site (see National Institute of Occupational Safety and Health/OSHA/U.S. Coast Guard/EPA *Occupational Safety and Health Guidance Manual*

for Hazardous Waste Site Activities, October 1985 for information on decontamination procedures and work zones).

- **Support Zone**—Uncontaminated area and may include site vehicles.

  The SZ is the uncontaminated area where workers are unlikely to be exposed to hazardous substances or dangerous conditions. The SZ is the appropriate location for the equipment and supply center and other administrative or support functions that are necessary to keep site operations running efficiently.

  Potentially contaminated clothing, equipment, and samples must remain outside the SZ until decontaminated. However, personnel located in the SZ must receive instruction in proper evacuation procedures in case of a hazardous substance emergency. The SZ should be upwind and as far from the EZ as practicable.

The level of PPE will depend upon the type of work performed and site monitoring data, in compliance with the PBW HSP (PBW 2005). Level D will be the minimum protection in the EZ. The CRZ will require a minimum Level D. No specific PPE requirements are needed in the SZ, as contaminated materials are prohibited from being stored in this area. Only authorized personnel will be permitted in the EZ and CRZ. Entering these zones will require donning the required PPE prior to entry. These zones will be established prior to beginning the field activities.

Exiting the EZ will require going through decontamination in the CRZ.

Safe work practices to be followed by site workers include:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited in all the three zones at any given time.
- Hands and face must be thoroughly washed upon leaving the work area.
- Personnel must not take prescription drugs unless specifically approved by a licensed physician who is familiar with the issues of worker exposure to hazardous materials.
- When respirators are required, facial hair that interferes with the face-to-facepiece fit of the respirator will not be permitted.
- Work is allowed during daylight hours only, unless adequate alternate lighting is provided that is compliant with OSHA 29 CFR 1926.56(a).
- If dust is being visually generated in the EZ, the PBW Site Health and Safety Officer will advise on procedures for misting or wetting the soil to prevent possible exposure from inhalation of soil contaminants.

- Possessing, using, purchasing, distributing, selling, or having controlled substances in one's system during the workday, including meal or break periods onsite, is strictly prohibited.

- The use or possession of alcoholic beverages onsite is prohibited; similarly, reporting to work or performing one's job assignments with excessive levels of alcohol in one's system will not be permitted.

REFERENCES

EA Engineering, Science, and Technology, Inc. (EA). 2004. Corporate Vessel Operations Manual. December.

EA. 2006. Remedial Investigation/Feasibility Study Oversight Work Plan for Gulfco Marine Maintenance Superfund Site. Revision 01. July.

Pastor, Behling & Wheeler, LLC (PBW). 2005. Site-Specific Health and Safety Plan for the Gulfco Marine Maintenance Superfund Site. August.

PBW. 2006. Sampling and Analysis Plan – Volume I, Field Sampling Plan, for the Gulfco Marine Maintenance Superfund Site. May.

Appendix A

Site Health and Safety Plan
Review Record

APPENDIX A

HEALTH AND SAFETY PLAN REVIEW RECORD

I have read the Health and Safety Plan for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

SITE: Gulfco Marine Maintenance, Freeport, Brazoria County, Texas			
Name	Signature	Affiliation	Date

Appendix B

Figures from PBW Field Sampling Plan (May 2006)

TEXAS

QUADRANGLE LOCATION

N

Scale in Feet

0 1000 2000

Source:
Base map taken from http://www.tnris.state.tx.us Freeport, Texas 7.5 min. U.S.G.S. quadrangle, 1974.

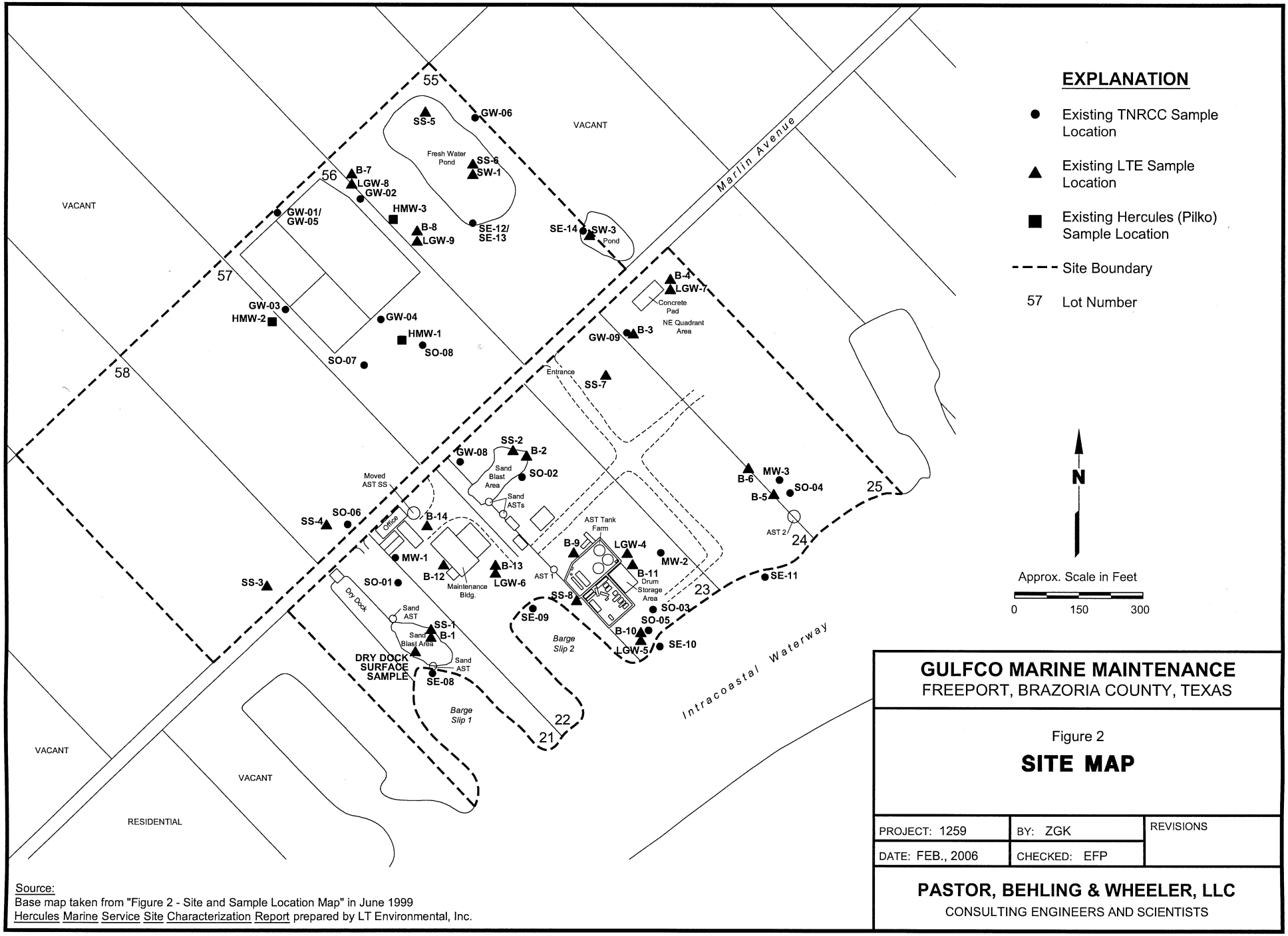
GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 1

SITE LOCATION MAP

PROJECT: 1259	BY: ZGK	REVISIONS
DATE: FEB., 2006	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



Source:
Base map taken from "Figure 2 - Site and Sample Location Map" in June 1999
Hercules Marine Service Site Characterization Report prepared by LT Environmental, Inc.

GULFCO MARINE MAINTENANCE
FREEPORT, BRAZORIA COUNTY, TEXAS

Figure 2
SITE MAP

PROJECT: 1259	BY: ZGK	REVISIONS
DATE: FEB., 2006	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Appendix C

Accident/Loss and Incident Report

ACCIDENT/LOSS REPORT

THIS REPORT MUST BE COMPLETED BY THE INJURED EMPLOYEE OR SUPERVISOR AND FAXED TO EA CORPORATE HUMAN RESOURCES WITHIN 24 HOURS OF ANY ACCIDENT. THE FAX NUMBER IS **(410) 771-1780**.

NOTE WHENEVER AN EMPLOYEE IS SENT FOR MEDICAL TREATMENT FOR A WORK RELATED INJURY OR ILLNESS, PAGE 4 OF THIS REPORT MUST ACCOMPANY THAT INDIVIDUAL TO ENSURE THAT ALL INVOICES/BILLS/CORRESPONDENCE ARE SENT TO HUMAN RESOURCES FOR TIMELY RESPONSE.

(410) DEMOGRAPHIC INFORMATION:

NAME OF INJURED EMPLOYEE:_____
HOME ADDRESS:_____
HOME PHONE:_____ DATE OF BIRTH:_____
AGE:_____ SEX: M F
MARITAL STATUS:_____ NAME OF SPOUSE (if applicable)_____
SOCIAL SECURITY NUMBER:_____ DATE OF HIRE:_____
NUMBER OF DEPENDENTS:_____
EMPLOYEES JOB TITLE:_____
DEPT. REGULARLY EMPLOYED:_____
WAS THE EMPLOYEE INJURED ON THE JOB: Y N
PRIMARY LANGUAGE OF THE EMPLOYEE: _____

(411) ACCIDENT/INCIDENT INFORMATION:

DATE OF ACCIDENT:_____ TIME OF ACCIDENT:_____
REPORTED TO WHOM: _____ NAME OF SUPERVISOR_____
EXACT LOCATION WHERE ACCIDENT OCCURRED (**including street, city, state and County**):
EXPLAIN WHAT HAPPENED (include what the employee was doing at the time of the accident and how the accident occurred): _____
_____
_____
_____

DESCRIBE THE INJURY AND THE SPECIFIC PART OF THE BODY AFFECTED (i.e., laceration, right hand, third finger):
_____
_____

OBJECT OR SUBSTANCE THAT DIRECTLY INJURED EMPLOYEE:_____

NUMBER OF DAYS AND HOURS EMPLOYEE USUALLY WORKS PER WEEK:_____
IS THE EMPLOYEE EXPECTED TO LOSE AT LEAST ONE FULL DAY OF WORK?_____
DOES THE EMPLOYEE HAVE A PREVIOUS CLAIM? Y N if yes, STATUS Open Closed
WAS THE EMPLOYEE ASSIGNED TO RESTRICTED DUTY? _____

(412) ACCIDENT INVESTIGATION INFORMATION

WAS SAFETY EQUIPMENT PROVIDED? Y N If yes, was it used? Y N
WAS AN UNSAFE ACT BEING FORMED ? Y N If yes, describe_____
WAS A MACHINE PART INVOLVED? Y N If yes, describe _____
WAS THE MACHINE PART DEFECTIVE? Y N If yes, in what way _____
WAS A 3RD PARTY RESPONSIBLE FOR THE ACCIDENT/INCIDENT? Y N
If yes, list Name, address and phone number_____
_____
WAS THE ACCIDENT/INCIDENT WITNESSED? Y N
If yes, list Name, address and phone number: _____
_____

(413) *PROVIDER INFORMATION*

WAS FIRST AID GIVEN ON SITE? Y N
If yes, what type of medical treatment was given _____
PHYSICIAN INFORMATION (if medical attention was administered)
NAME:_____
ADDRESS (incl. City, state and zip):_____
PHONE:_____

HOSPITAL ADDRESS (incl. Name, address, city, state, zip code & phone)
_____
_____

WAS THE EMPLOYEE HOSPITALIZED? Y N If yes, on what date_____
WAS THE EMPLOYEE TREATED AS AN OUTPATIENT, RECEIVE EMERGENCY TREATMENT OR AMBULANCE SERVICE? _____

PLEASE ATTACH THE PHYSICIANS WRITTEN RETURN TO WORK SLIP

***NOTE* A PHYSICIANS RETURN TO WORK SLIP IS REQUIRED PRIOR TO ALLOWING THE WORKER TO RETURN TO WORK**

(414) AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)

AUTHORITY CONTACTED AND REPORT #_____
EA EMPLOYEE VEHICLE YEAR, MAKE AND MODEL_____

V.I.N._____ PLATE/TAG #_____
OWNER'S NAME AND ADDRESS:_____
DRIVER'S NAME AND ADDRESS: _____
RELATION TO INSURED:_____DRIVER'S LICENSE #_____
DESCRIBE DAMAGE TO YOUR PROPERTY:_____
DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY:_____
OTHER DRIVER'S NAME AND ADDRESS: _____
OTHER DRIVER'S PHONE:_____
OTHER DRIVER'S INSURANCE COMPANY AND PHONE:_____
LOCATION OF OTHER VEHICLE:_____
NAME, ADDRESS AND PHONE OF OTHER INJURED PARTIES:_____
WITNESSES
NAME:_____ PHONE:_____
ADDRESS:_____
STATEMENT:_____
SIGNATURE: _____

NAME:_____ PHONE:_____
ADDRESS:_____
STATEMENT:_____
SIGNATURE: _____

(415) ***ACKNOWLEDGEMENT***

NAME OF SUPERVISOR:_____
DATE OF THIS REPORT: _____ REPORT PREPARED BY:_____

I have read this report and the contents as to how the accident/loss occurred is accurate to the best of my knowledge.

Signature: _____ Date: _____
Injured Employee

I am seeking medical treatment for a work related injury/illness.

Please forward all bills/invoices/correspondence to:

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

11019 McCORMICK ROAD

HUNT VALLEY, MD 21031

ATTENTION: Michele Bailey
HUMAN RESOURCES

(410) 584-7000

INCIDENT REPORT

THIS REPORT IS TO BE COMPLETED WHEN A NEAR MISS OCCURS THAT COULD HAVE POTENTIALLY RESULTED IN SERIOUS PHYSICAL HARM. PLEASE FAX THIS FORM TO EA HUMAN RESOURCES DEPARTMENT AT **(410) 771-1780**.

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time the near miss and how it occurred: _____

REPORT PREPARED BY: _____ DATE:_____